

## Section 2.5 Solving One-Step Equations

1. To prepare for our class game, solve and check these one-step equations with your group. Show your operation and write the solution set. Make sure everyone in your group understands the process.

a.  $y + 1 = -10$

$$\begin{array}{rcl} y + 1 - 1 & = & -10 - 1 \\ y & = & -11 \end{array}$$

The solution set is  $\{-11\}$ .

$$\begin{array}{rcl} y + 1 & = & -10 \\ -11 + 1 & \stackrel{?}{=} & -10 \\ -10 & \stackrel{?}{=} & -10 \\ \text{Yes!} & & \end{array}$$

b.  $z - 12 = 5$

$\{17\}$

c.  $15 = -3x$

$\{-5\}$

d.  $-7z = 8$

$\{-\frac{8}{7}\}$

e.  $x - (-7) = 7$

$\{0\}$

f.  $t - \frac{2}{3} = -\frac{7}{6}$

$\{-\frac{1}{2}\}$

g.  $-\frac{1}{5}x = -20$

$\{100\}$

h.  $\frac{x}{12} = -\frac{3}{4}$

$\{-9\}$

2. Solving one-step equations Kahoot Game: <https://play.kahoot.it/#/k/6e8041d6-0e44-4140-93a9-23ce4e1bbde1>. Have one person from your group with a smartphone go to kahoot.it.

Write down the equation and your step to solve it in each box.

|     |     |     |
|-----|-----|-----|
| 1.  | 2.  | 3.  |
| 4.  | 5.  | 6.  |
| 7.  | 8.  | 9.  |
| 10. | 11. | 12. |
| 13. | 14. | 15. |
| 16. | 17. | 18. |
| 19. | 20. | 21. |
| 22. | 23. | 24. |
| 25. | 26. | 27. |
| 28. | 29. | 30. |

### Applications of Solving One-Step Equations

3. Write and solve an equation for each scenario given. Include units in your answer.

a. The circumference of a frisbee is  $20\pi$  cm. Find the radius.

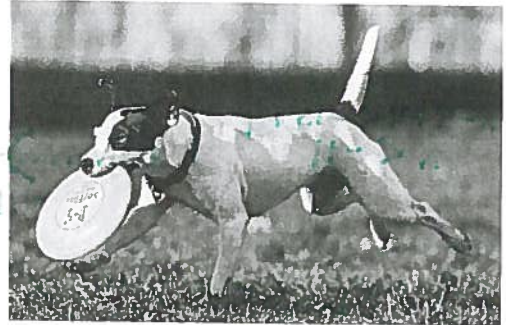
Recall geometry formula  $\rightarrow C = 2\pi r$

Substitute in values you know  $\rightarrow 20\pi = 2\pi r$

Solve the equation  $\left[ \begin{aligned} \frac{20\pi}{2\pi} &= \frac{2\pi r}{2\pi} \\ 10 &= r \end{aligned} \right.$

Conclusion

The frisbee's radius is 10 cm.



b. A fish tank has a volume of 2598.528 cubic inches. The base is 20.1 inches by 10.1 inches. Find the height of the tank.

The tank's height is 12.8 in.



c. A triangle has a height of 31 mm and an area of  $263.5 \text{ mm}^2$ . Find the base of the triangle.  
Hint: Draw a picture.


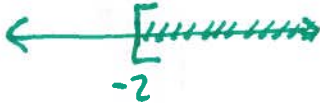
The triangle's base is 17 mm.

d. A rectangular field has a fence around it that is 280 yards around. If the field is 100 yards long, how wide is it? Hint: Draw a picture. Can you write an equation to model this?

The field is 40 yd wide.

## Section 2.6 Solving One-Step Inequalities

4. To prepare for another class game, solve each inequality and graph each solution on a number line. Write the solution set in interval and set-builder notation. Make sure each person understands the process.

| Solve the Inequality                                   | Number Line Graph  | Interval         | Set-builder Notation   |
|--|--|------------------|------------------------|
| a. $x - 4 < -15$<br>$x - 4 + 4 < -15 + 4$<br>$x < -11$ |   | $(-\infty, -11)$ | $\{x \mid x < -11\}$   |
| b. $-5y \leq 10$<br>$y \geq -2$                        |  |                  |                        |
| c. $9 > \frac{1}{3}t$<br>$t < 27$                      |  | $(-\infty, 27)$  |                        |
| d. $-9 \geq -8 + x$<br>$x \leq -1$                     |  |                  | $\{x \mid x \leq -1\}$ |

5. Find a partner from a different table and introduce yourselves. Write their name in the space provided. Get ready for the first inequality to solve. You will solve each one with a different partner.

| Partner | Solve the Inequality | Number Line Graph | Interval | Set-builder Notation |
|---------|----------------------|-------------------|----------|----------------------|
|         | a.                   |                   |          |                      |
|         | b.                   |                   |          |                      |
|         | c.                   |                   |          |                      |
|         | d.                   |                   |          |                      |
|         | e.                   |                   |          |                      |

### More Practice

6. Solve and check each equation and write the solution set.

a.  $-9 + x = -1$

$$\{8\}$$

b.  $\frac{1}{2}r = -20$

$$\{-40\}$$

c.  $-k = \frac{5}{2}$

$$\left\{-\frac{5}{2}\right\}$$

d.  $4 = x - 15$

$$\{19\}$$

7. Solve each inequality and draw the solution set on a number line. Write the solution set in interval and set-builder notation.

a.  $-2 + t > -1$

$$(1, \infty)$$
$$\{t \mid t > 1\}$$

b.  $-\frac{3}{4}y \leq \frac{5}{4}$

$$\left[-\frac{5}{3}, \infty\right)$$
$$\{y \mid y \geq -\frac{5}{3}\}$$

c.  $5p \leq -20$

$$(-\infty, -4]$$
$$\{p \mid p \leq -4\}$$

d.  $11 > x - 9$

$$(-\infty, 20)$$
$$\{x \mid x < 20\}$$